

REMARKS

This amendment responds to the office action mailed on March 21, 2005 **Error!**

Reference source not found.. In the office action the Examiner:

- rejected claims 126-160 for obvious-type double patenting in view of US 6,396,329.
- rejected claims 126-140 and 142-160 under 35 U.S.C. 102(b) as anticipated by Hui (US 5,793,816);
- objected to claim 141 as being dependent upon a rejected base claim;

After entry of this amendment, the pending claims are: claims 126-160, 172-173.

Overview of Changes to Claims

Claims 126 and 142 have been amended to clarify that the received symbols are a sequence of received N-PAM or M-PAM symbols, and that each symbol in the stream has one of N or one of M symbol values. Support is found in the specification on p. 59, lines 13-20 and 28-30. and pages 62-63. In addition, claim 142 has been amended to indicate that PAM is pulse amplitude modulation. Support is found in the specification on p. 10, line 6. The amendments, therefore, do not constitute new matter.

Double Patenting

In the present Office Action, the Examiner rejected claims 126-160 for obvious type double patenting. A terminal disclaimer with respect to the commonly owned US 6,396,329 in compliance with 37 CFR 1.321(c) is enclosed. Removal of this ground for rejection is requested.

35 USC 102(b) Rejection

In the present Office Action, the Examiner rejected claims 126-140 and 142-160 as anticipated by Hui. The Applicants disagree and traverse.

As discussed in the reply dated December 13, 2004, Hui discloses transmitting and receiving data between two integrated circuits using differential signals (col. 5, lines 63-65) transmitted over a pair of signal lines. The differential signals in Hui represent a sequence of 4-PAM symbols. Each and every symbol transmitted by Hui has one of 4 symbol values, represented by 4 differential voltage levels, which is why the symbols in Hui are 4-PAM symbols. In 4-PAM, two data bits are mapped to one of four voltage levels (which may be

single ended or differential voltage signals) or current levels. See the driver outputs and receiver inputs in col. 3, Tables A and B, respectively.

Claim 126 includes the following:

wherein the received symbols are N-PAM symbols when the specified mode is a first mode, each respective N-PAM symbol in the sequence of received symbols having one of N distinct symbol values;

wherein the received symbols are M-PAM symbols when the specified mode is a second mode, each respective M-PAM symbol in the sequence of received symbols having one of M distinct symbol values;

For example, if $N=4$ and $M=2$, then when the specified mode is the first mode, the received symbols are 4-PAM symbols, each having one of 4 distinct symbol values. When the specified mode is the second mode, the received symbols are 2-PAM symbols, each having one of 2 distinct symbol values. Thus, in accordance with claim 126, IN THE FIRST MODE, the received symbols have 4 distinct symbol values. And, IN THE SECOND MODE, the received symbols have just 2 distinct symbol values.

Hui neither discloses nor teaches the use of multiple modes of operation, each mode of operation using a different pulse amplitude modulation, say, 4-PAM in one mode of operation and 2-PAM or 8-PAM in another mode of operation. Rather, Hui has only a single mode of operation: 4-PAM.

In the present Office Action, the Examiner has argued that each of the four levels in 4-PAM constitutes a specified mode. Specifically, “wherein the 1 to 4 voltage levels are various modes, which constitute as being first, second, third and fourth mode” (p. 7, lines 2-3), i.e., that each of the alleged ‘modes’ in Hui have one voltage level.

It is a fundamental tenant of patent law that the terms used in patent applications and in prior art documents are to be given their ordinary meaning in the art, unless those documents provide special definitions of those terms. The Examiner’s office action fails to comply with this basic tenant of patent law, by applying definitions to three terms (“differential signal” (in Hui), “mode” (in the claims) and “N-PAM” (or M-PAM) (in the claims)) that are inconsistent with the ordinary meaning of these terms in the art. The terms “differential signal”, “mode” and “N-PAM” are not meaningless words, and the Examiner is

obligated as a matter of law to construe these terms in accordance with how these terms are used in the applicable field, which in this case is electronic signal communications.

It is noted here for the record that the Examiner's argument is based on incorrect definitions of the terms "mode" and "PAM", both of which are well defined terms in the art of electronic signal communications. The Examiner's argument is also flawed, and fundamentally incorrect, because it treats the X and Y portions of a pair of differential signal lines in Hui as carrying two distinct signals having two distinct modes of operation, when in fact the X and Y lines carry a single sequence of signals or symbols using a single mode of operation. The Examiner's deconstruction of a differential signal in Hui into two components having distinct modes of operation is contrary to basic teachings of electrical engineering known to even junior-level undergraduate engineering students. Differential signaling is a fundamental, elementary concept of electrical engineering. The signals on the X and Y lines in Hui are produced by circuits that output complementary signals on X and Y. Together, the complementary signals on X and Y at any one time are called a "differential signal." The voltage difference between the X and Y signals at any one time represents a single two-bit symbol, and the X-Y differential signal is a 4-PAM signal.

Furthermore, when receiving a sequence of symbols, each symbol value does not constitute a distinct "mode" of operation. The Examiner's use of the term "mode" in the office action and Interview Summary is inconsistent with normal usage in the term in the applicable field, and is therefore contrary to the requirements of law and the MPEP. Furthermore, the claims have now been revised to clarify that in each mode, the stream of symbols includes symbols have multiple symbol values.

In addition, the terms 2-PAM, 4-PAM and the like are well established in the art. A simple search using the Google search engine, or any other large scale web search engine, produces dozens of documents (including documents published by the assignee of this application) that use these terms. The Examiner's construction of these terms as essentially meaningless labels is contrary to the well established meaning of these terms in the applicable art, and is therefore contrary to the requirements of law and the MPEP.

In summary, all the differential pairs of signal lines in Hui operate as 4-PAM signal lines, and Hui teaches no other mode of operation. Since claims 126 and 142 require a receiver (claim 126) or transceiver (claim 142) having at least two distinct modes operation (N-PAM and M-PAM, where N and M are unequal), the pending claims are patentable over Hui.

Since the remaining dependent claims include the limitations of their parent claims, Hui does not anticipate the remaining dependent claims either. Removal of this ground for rejection is requested.

CONCLUSION

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance of all of the pending claims. The Examiner is invited to call the undersigned attorney at (650) 843-7501, if a telephone call could help resolve any remaining items.

Respectfully submitted,

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